Francis

Francis Overview

Volunteer monitoring began at Lake Francis in the 1996 and continued through 2004. The data indicate that this lake is fairly high in primary productivity (mesotrophic to threshold eutrophic) with good to fair water quality.

Lake Francis has no public access, but residents should monitor aquatic plants growing nearshore to catch early infestations of Eurasian milfoil, Brazilian elodea or other noxious aquatic weeds.

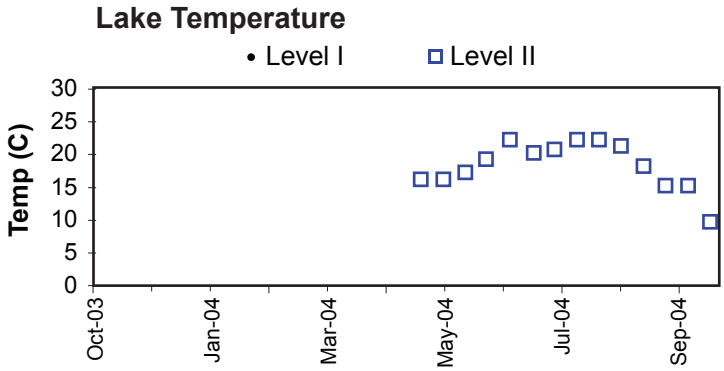
Physical Parameters

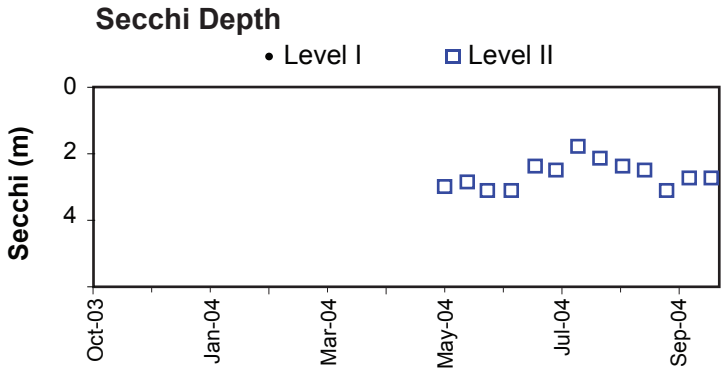
The Secchi transparency during the sampling season was fairly steady, ranging between 1.5 and 2.6m, averaging 2.2 m which was in the lower range for small lakes monitored in 2004. Surface water temperatures reached a maximum of 22.0 degrees Celsius which was among the coolest of the recorded maxima over the summer for the group.

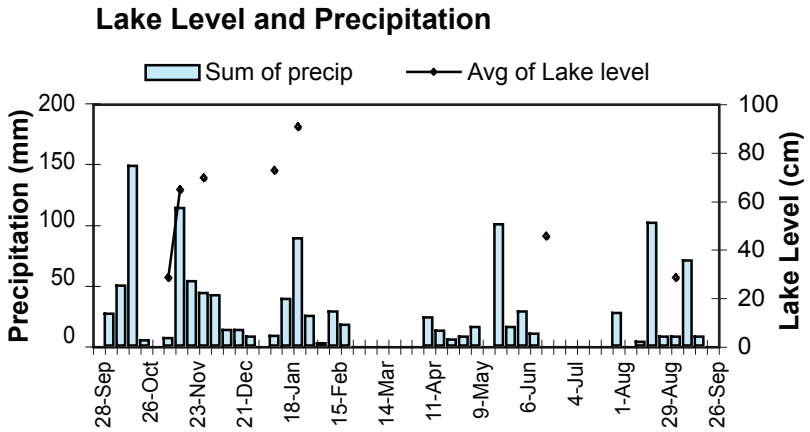
Lake level and precipitation records were irregularly reported in 2004.

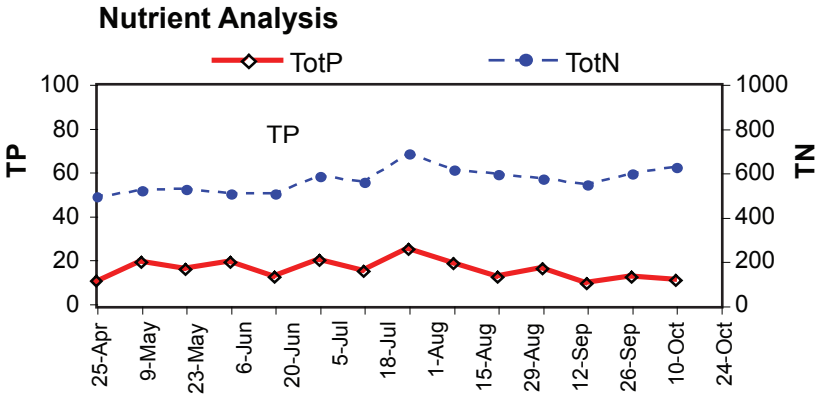
Nutrient Analysis and TSI Ratings

Total phosphorus and total nitrogen remained in fairly close proportion to each other through the sampling period, with nitrogen increasing slightly over the season. The N:P ratio ranged from 26 to 56, averaging 38 which suggests poor conditions for nuisance bluegreen algae.









Lake Francis is too shallow for profile sampling to provide important information.

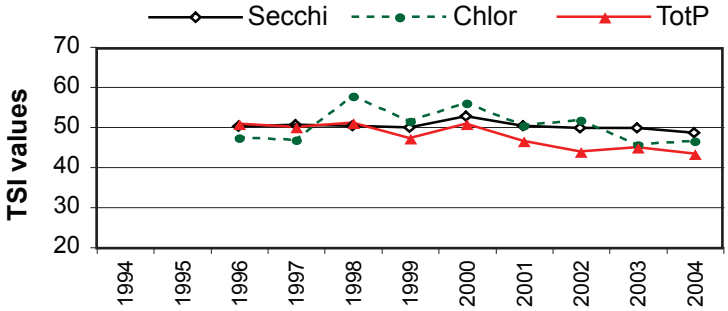
The 2004 TSI-Secchi was slightly higher than the other two indicators, which were in the midrange for mesotrophy similar to 2003.

Chlorophyll Concentrations and Algae

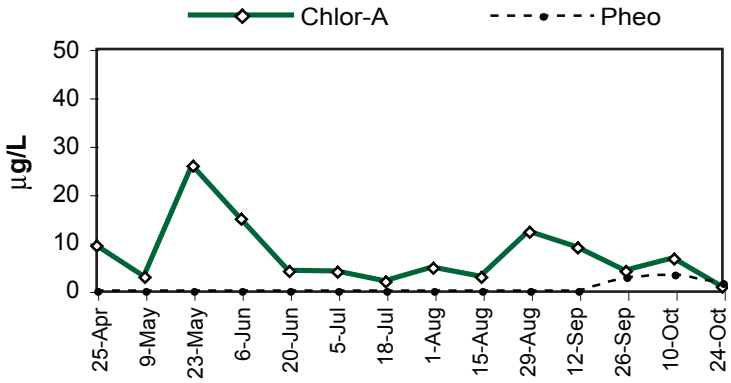
Chlorophyll content reached a peak in late May and then remained fairly low through the rest of the sampling season. The May-June phytoplankton community was dominated by the colonial bluegreen *Aphanothece*, with a significant contribution by an unidentified chrysophyte species. Other algae commonly found through the season included several species of the chrysophyte *Dinobryon* and the colonial bluegreen *Anacystis*.

Date	Secchi depth-m	degC	Chlor-A	TP µg/L	TN µg/L
NO DATA AVAILABLE					

TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common Algae

	Group
Anacystis sp.	Cyanobacteria
Dinobryon spp.	Chrysophyta
unidentified cells	Chrysophyta

Francis

2004 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
28-Sep-03	0.0	4		
5-Oct-03	26.1	7		
12-Oct-03	49.1	5		
19-Oct-03	148.0	7		
26-Oct-03	4.0	7		
2-Nov-03	0.0	7		
9-Nov-03	6.1	7	28.0	1
16-Nov-03	113.0	7	64.0	1
23-Nov-03	53.0	5		
30-Nov-03	43.0	7	69.0	1
7-Dec-03	41.1	3		
14-Dec-03	13.0	7		
21-Dec-03	13.1	7		
28-Dec-03	7.0	4		
4-Jan-04				
11-Jan-04	8.1	2	72.0	1
18-Jan-04	38.0	7		
25-Jan-04	88.1	7	90.0	1
1-Feb-04	24.1	7		
8-Feb-04	2.1	7		
15-Feb-04	28.1	7		
22-Feb-04	17.2	7		
29-Feb-04				
7-Mar-04				
14-Mar-04				
21-Mar-04				
28-Mar-04	0.0	3		
4-Apr-04	0.0	7		
11-Apr-04	23.1	7		
18-Apr-04	12.1	7		
25-Apr-04	5.0	7		
2-May-04	7.1	7		
9-May-04	15.0	7		
16-May-04	0.0	7		
23-May-04	100.0	7		
30-May-04	15.0	7		
6-Jun-04	28.0	7		
13-Jun-04	10.0	7		
20-Jun-04	0.1	6	45.0	1
27-Jun-04	0.0	4		
4-Jul-04				
11-Jul-04				
18-Jul-04				
25-Jul-04				
1-Aug-04	27.1	7		
8-Aug-04	0.0	7		
15-Aug-04	3.0	7		
22-Aug-04	101.0	7		
29-Aug-04	7.0	7		
5-Sep-04	7.1	7	28.0	1
12-Sep-04	70.0	7		
19-Sep-04	7.1	7		
26-Sep-04	0.0	5		
Min	0.0		28.0	
Max	148.0		90.0	
Total	1159.2			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
5-Oct-03	18:30	0.1	16	P2		10
19-Oct-03	18:00	2.3	13.0	P1		12
Min		0.0	0.0			
Max		0.0	0.0			

* See introduction for discussion of algae assessment and goose count methods.

2004 Level II Data

Date (2004)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI		
								Secc	chl-a	TP
25-Apr	16.0	NR	9.29	10.2	491	1	48		52.4	37.7
9-May	16.0	2.5	2.88	19.6	521	1	27	46.8	40.9	47.1
23-May	17.0	2.4	25.80	16.4	529	1	32	47.4	62.5	44.5
6-Jun	19.0	2.6	14.80	19.4	508	1	26	46.2	57.0	46.9
20-Jun	22.0	2.6	4.01	12.8	507	1	40	46.2	44.2	40.9
5-Jul	20.0	2.0	3.94	20.5	585	1	29	50.0	44.0	47.7
18-Jul	20.5	2.1	1.90	15.4	559	1	36	49.3	36.9	43.6
1-Aug	22.0	1.5	4.75	25.4	688	2	27	54.1	45.8	50.8
15-Aug	22.0	1.8	2.88	18.9	614	2	32	51.5	40.9	46.6
29-Aug	21.0	2.0	12.20	12.9	594	2	46	50.0	55.1	41.0
12-Sep	18.0	2.1	8.97	16.7	573	1	34	49.3	52.1	44.8
26-Sep	15.0	2.6	4.12	9.8	549	1	56	46.2	44.5	37.1
10-Oct	15.0	2.3	6.57	12.9	598	1	46	48.0	49.0	41.0
24-Oct	9.5	2.3	0.80	11.5	626	1	54	48.0	28.4	39.4
	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae	N:P	Calculated TSI		
								Secc	chl-a	TP
Mean	18.1	2.2	7.4	15.9	567.3	1.2	38	48.7	46.7	43.5
Median	18.5	2.3	4.4	15.9	566.0	1	35	48.0	45.2	44.0
Min	9.5	1.5	0.8	9.8	491.0	1	26	46.2	28.4	37.1
Max	22.0	2.6	25.8	25.4	687.5	2	56	54.1	62.5	50.8
Count	14	13	14	14	14	14	14	13	14	14

TSI Average = 46.3